

Prehistoric Earth

Grade Level: 1-2

Subject: Earth Science

Duration: Two class periods

Objectives

Students will

- describe a fossil;
- make two types of fossils; and
- explain how fossils are formed.

Materials

- *Prehistoric Earth* video and VCR (or DVD and DVD player)
- White paper
- Crayons
- Feathers, bones, twigs, leaves, shells or other fossil-making materials
- Small plastic containers (1 per student, margarine or soft cream cheese containers work well)
- Mud (enough to fill a plastic container for each student)
- Toothpicks
- Small paintbrushes
- Paint (optional)

Procedures

1. Begin the lesson by introducing the term “fossil” and the science of paleontology.
2. After watching *Prehistoric Earth*, discuss paleontology. Ask students: What do paleontologists do? How do we know about the dinosaurs and other extinct animals? What are fossils? What can they tell us?
3. Tell students that they are going to pretend to be paleontologists studying fossils. Give each student a fossil-making object, such as a small bone, twig, feather, leaf, or shell. Ask: What is the object you have been given? Do you think it comes from a plant or an animal? What kind of plant or animal might it have come from?
4. Give students white paper and crayons. Have them place their fossil-making object beneath the piece of paper and then color the paper with a crayon to create a tracing. Tell students that some fossils look like their tracings—slight imprints of decayed animals or plants left behind in old rocks. They are called trace fossils.
5. When students have finished making their trace fossils, take them outside with their fossil-making materials, plastic containers, and the mud. Have students fill their containers about halfway with mud and then gently place their fossil-making object in the mud. Have them then cover the object with enough mud to fill the container. Have students write their names on the plastic containers and put them in the sun to dry.
6. The following day, bring students outside to “excavate” their fossils. Give them toothpicks, small paintbrushes, and other useful tools to carefully chip away the top layer of mud from the fossil. Have students remove the object and observe the fossil imprint the object made in the mud. Ask: What does the imprint look like? Tell students that fossils sometimes occur when animals or plants have died and been quickly covered by layers of sediment or rock. Over time, the animal or plant decays, leaving a sort of “shell” in the rock, similar to what they see in their dried mud. Allow students to paint their mud fossils.

7. End the lesson by talking about fossils. Ask students: What is a fossil? How do paleontologists find fossils? Why do they have to be so careful when excavating fossils?

Adaptations

For Grades 3-5

Have students bring in their own fossil-making objects from home; stress that they keep the objects a secret, not sharing them with their classmates. Skip the trace fossil part of the lesson, and have students immediately make their fossil imprints in the mud. The following day, have students carefully remove their fossil objects from the mud and then bury the fossil imprints in a sand pit outside, creating a class "dig site." Give students small shovels, brushes, and toothpicks to excavate the site. When students come upon others' fossil imprints, have them try to determine what plant, animal, or object made the imprint.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

- **Three points:** Students actively participated in class discussions; used the mud and other materials wisely; made both trace and mud fossils; were able to demonstrate an exact understanding of what a fossil is and how fossils are formed.
- **Two points:** Students somewhat participated in class discussions; used the mud and other materials with little teacher assistance; made at least one trace or mud fossil; were able to demonstrate an adequate understanding of what a fossil is and how fossils are formed.
- **One point:** Students did not participate in class discussions; were unable to use mud and other materials without assistance; did not make a trace or mud fossil; were unable to explain what a fossil is or how fossils are formed.

Vocabulary

excavation

Definition: The act of digging; the site of an archeological exploration

Context: They use shovels, picks, and sometimes brushes to unearth preserved fossils. This process is called excavation.

extinction

Definition: No longer in existence; the death of an entire species

Context: The meteorite that hit Earth 65 million years ago, at the end of the Mesozoic Period, caused another great extinction—the eradication of many large animals, including the dinosaurs.

fossils

Definition: Remains or impressions of plants or animals that existed in a past geological age that have been excavated from the soil

Context: Fossils—bones, shells, or preserved imprints—are the best evidence scientists have to study dinosaurs.

geologic time

Definition: The succession of eras, periods, and epochs as considered in historical geology

Context: To describe and organize events in Earth's past, scientists use what's known as geologic time.

paleontologist

Definition: A person who specializes in paleontology, the scientific study of extinct organisms through the examination of fossils

Context: Scientists who study the fossils of prehistoric plants and animals are called paleontologists.

Academic Standards

National Academy of Sciences

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what

it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following national standards:

- History and Nature of Science: Science as a human endeavor
- Earth and Space Science: Properties of earth materials

Credit

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